

WHAT IS CLAIMED IS:

1. A method comprising:

5 establishing a transport protocol tunnel connection from a first node in a messaging system to a second node in the messaging system;

generating a messaging system message on the first node;

10 generating one or more transport protocol packets, wherein the one or more transport protocol packets each includes at least a part of the messaging system message; and

15 transmitting the one or more transport protocol packets to the second node via the transport protocol tunnel connection;

20 wherein the transport protocol tunnel connection provides full-duplex transmission of messaging system messages between the first node and the second node, and wherein the transport protocol tunnel connection further provides delivery of the messaging system messages in the sequence in which the messaging system messages are generated.

25 2. The method as recited in claim 1, further comprising storing the messaging system message in a transmit buffer on the first node after said generating the messaging system message on the first node.

3. The method as recited in claim 1, wherein the transport protocol tunnel connection passes through a proxy server.

4. The method as recited in claim 3, wherein said transmitting the one or more transport protocol packets to the second node via the transport protocol tunnel connection comprises:

5 transmitting the one or more transport protocol packets from the first node to the proxy server; and

transmitting the one or more transport protocol packets from the proxy server to the second node.

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5. The method as recited in claim 1, wherein the transport protocol tunnel connection passes through at least one firewall.

15 6. The method as recited in claim 1, wherein the transport protocol tunnel connection is established through a network.

7. The method as recited in claim 6, wherein the network is the Internet.

20 8. The method as recited in claim 1, wherein the first node is a client in the messaging system, and wherein the second node is a broker in the messaging system.

9. The method as recited in claim 1, wherein the transport protocol tunnel connection passes through a third node, and wherein, in said transmitting the one or more transport protocol packets to the second node, the method further comprises:

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transmitting the one or more transport protocol packets to the third node; and

the third node forwarding the one or more transport protocol packets to the second node.

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10. The method as recited in claim 9, wherein the one or more transport protocol packets are forwarded to the second node via a Transmission Control Protocol (TCP) connection portion of the transport protocol tunnel connection between the third node and the second node.

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11. The method as recited in claim 9, wherein the third node is a Web server.

12. The method as recited in claim 1, wherein the transport protocol tunnel connection passes through a proxy server and a Web server, and wherein said transmitting 10 the one or more transport protocol packets to the second node via the transport protocol tunnel connection comprises:

transmitting the one or more transport protocol packets from the first node to the proxy server;

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transmitting the one or more transport protocol packets from the proxy server to the Web server; and

20 the Web server forwarding the one or more transport protocol packets to the second node.

13. The method as recited in claim 12, wherein the transport protocol tunnel connection passes through at least one firewall between the proxy server and the Web server.

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14. The method as recited in claim 1, wherein the one or more transport protocol packets include messaging system message sequence information configured for use in processing two or more messaging system messages in sequence.

30 15. The method as recited in claim 1, further comprising:

receiving the transmitted one or more transport protocol packets on the second node; and

5 storing the messaging system message from the one or more transport protocol packets in a receive buffer on the second node.

16. The method as recited in claim 1, further comprising:

10 receiving the transmitted one or more transport protocol packets on the second node;

15 the second node generating an acknowledgement transport protocol packet to indicate successful receipt of the one or more transport protocol packets including the messaging system message; and

transmitting the acknowledgement transport protocol packet to the first node via the transport protocol tunnel connection.

20 17. The method as recited in claim 16, further comprising:

storing the messaging system message from the received one or more transport protocol packets in a receive buffer on the second node;

25 wherein the acknowledgement transport protocol packet includes information indicating available space in the receive buffer, and wherein the information indicating available space in the receive buffer is configured for use in flow control of messaging system messages transmitted from the first node to the second node.

18. The method as recited in claim 17, further comprising:

receiving the transmitted acknowledgement transport protocol packet on the first node;

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generating one or more messaging system messages on the first node;

storing the one or more messaging system messages in a transmit buffer on the first node;

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determining from the information indicating available space in the receive buffer included in the received acknowledgement transport protocol packet if there is space available to receive the one or more messaging system messages on the second node;

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if said determining indicates there is space available to store the one or more messaging system messages in the receive buffer of the second node:

generating a second one or more transport protocol packets, wherein the second one or more transport protocol packets include the one or more messaging system messages; and

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transmitting the second one or more transport protocol packets to the second node via the transport protocol tunnel connection; and

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if said determining indicates there is not space available to store the second messaging system message in the receive buffer of the second node, inhibiting generating the second one or more transport protocol packets including the one or more messaging system messages.

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19. The method as recited in claim 18, further comprising:

the first node receiving a transport protocol packet indicating available space in the receive buffer of the second node;

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determining from the information indicating available space in the receive buffer included in the received transport protocol packet that there is space available to receive the one or more messaging system messages on the second node;

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generating the second one or more transport protocol packets, wherein the second one or more transport protocol packets include the one or more messaging system messages; and

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transmitting the second one or more transport protocol packets to the second node via the transport protocol tunnel connection.

20. The method as recited in claim 16, wherein the transport protocol tunnel connection passes through a third node, and wherein, in said transmitting the acknowledgement transport protocol packet to the first node, the method further comprises:

transmitting the acknowledgement transport protocol packet to the third node; and

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storing the acknowledgement transport protocol packet in a transport protocol packet buffer on the third node.

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21. The method as recited in claim 20, wherein, in said transmitting the acknowledgement transport protocol packet to the first node, the method further comprises:

the first node transmitting a transport protocol request packet to the third node;
and

5 the third node transmitting the acknowledgement transport protocol packet stored
 in the transport protocol packet buffer to the first node via the transport
 protocol tunnel connection in response to the transport protocol request
 packet.

10 22. The method as recited in claim 21, wherein the acknowledgement transport
 protocol packet is transmitted to the third node via a Transmission Control Protocol
 (TCP) connection portion of the transport protocol tunnel connection.

15 23. The method as recited in claim 16, wherein the transport protocol tunnel
 connection passes through a third node, and wherein, in said transmitting the
 acknowledgement transport protocol packet to the first node, the method further
 comprises:

20 transmitting the acknowledgement transport protocol packet to the third node; and
 the third node forwarding the acknowledgement transport protocol packet to the
 first node.

25 24. The method as recited in claim 23, wherein the acknowledgement transport
 protocol packet are forwarded to the first node via a Transmission Control Protocol
 (TCP) connection portion of the transport protocol tunnel connection.

26 25. The method as recited in claim 1, wherein the first node is a server in the
 messaging system, and wherein the second node is a client in the messaging system.

26. The method as recited in claim 1, wherein the transport protocol tunnel connection passes through a third node, and wherein, in said transmitting the one or more transport protocol packets to the second node via the transport protocol tunnel connection, the method further comprises:

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transmitting the one or more transport protocol packets to the third node; and

storing the one or more transport protocol packets in a transport protocol packet buffer on the third node.

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27. The method as recited in claim 26, wherein, in said transmitting the one or more transport protocol packets to the second node via the transport protocol tunnel connection, the method further comprises:

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the second node sending one or more transport protocol request packets to the third node; and

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the third node transmitting the one or more transport protocol packets stored in the transport protocol packet buffer to the second node via the transport protocol tunnel connection in response to the one or more transport protocol request packets.

28. The method as recited in claim 26, wherein the third node is a Web server.

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29. The method as recited in claim 1, wherein the transport protocol is Hypertext Transport Protocol (HTTP).

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30. The method as recited in claim 1, wherein the transport protocol is one of UDP (User Datagram Protocol), IrDA (Infrared Data Association), SNA (Systems Network Architecture), IPX (Internetwork Packet eXchange), and Bluetooth.

31. A method comprising:

5 establishing a Hypertext Transport Protocol (HTTP) tunnel connection from a first node in a messaging system to a second node in the messaging system;

generating a messaging system message on the first node;

10 generating one or more HTTP packets, wherein the one or more HTTP packets each includes at least a part of the messaging system message; and

transmitting the one or more HTTP packets to the second node via the HTTP tunnel connection;

15 wherein the HTTP tunnel connection provides full-duplex transmission of messaging system messages between the first node and the second node, and wherein the HTTP tunnel connection further provides delivery of the messaging system messages in the sequence in which the messaging system messages are generated.

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32. The method as recited in claim 31, wherein the first node is a client in the messaging system, wherein the HTTP tunnel connection passes through a proxy server, and wherein said transmitting the one or more HTTP packets to the second node via the

25 HTTP tunnel connection comprises:

transmitting the one or more HTTP packets from the client to the proxy server; and

30 transmitting the one or more HTTP packets from the proxy server to the second node.

33. The method as recited in claim 31, wherein the HTTP tunnel connection is established through the Internet, and wherein the HTTP tunnel connection passes through at least one firewall.

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34. The method as recited in claim 31, wherein the first node is a client in the messaging system, and wherein the second node is a broker in the messaging system.

35. The method as recited in claim 31, wherein the HTTP tunnel connection passes through a Web server, wherein the second node is a broker in the messaging system, and wherein, in said transmitting the one or more HTTP packets to the second node, the method further comprises:

transmitting the one or more HTTP packets to the Web server; and

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the Web server forwarding the one or more HTTP packets to the broker via a Transmission Control Protocol (TCP) connection portion of the HTTP tunnel connection between the Web server and the broker.

20 36. The method as recited in claim 31, wherein the first node is a client in the messaging system, wherein the second node is a broker in the messaging system, wherein the HTTP tunnel connection passes through a proxy server and a Web server, and wherein said transmitting the one or more HTTP packets to the broker via the HTTP tunnel connection comprises:

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transmitting the one or more HTTP packets from the client to the proxy server;

transmitting the one or more HTTP packets from the proxy server to the Web server; and

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the Web server forwarding the one or more HTTP packets to the broker;

wherein the HTTP tunnel connection passes through at least one firewall between the proxy server and the Web server.

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37. The method as recited in claim 31, wherein the one or more HTTP packets include messaging system message sequence information configured for use in processing two or more messaging system messages in sequence.

10 38. The method as recited in claim 31, further comprising:

receiving the transmitted one or more HTTP packets on the second node;

15 storing the messaging system message from the one or more HTTP packets in a receive buffer on the second node;

the second node generating an acknowledgement HTTP packet to indicate successful receipt of the one or more HTTP packets including the messaging system message; and

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transmitting the acknowledgement HTTP packet to the first node via the HTTP tunnel connection.

25 39. The method as recited in claim 38, wherein the acknowledgement HTTP packet includes information indicating available space in the receive buffer, the method further comprising:

receiving the transmitted acknowledgement HTTP packet on the first node;

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generating one or more messaging system messages on the first node;

storing the one or more messaging system messages in a transmit buffer on the first node;

5 determining from the information indicating available space in the receive buffer included in the received acknowledgement HTTP packet that there is not space available to receive the one or more messaging system messages on the second node;

10 the first node receiving an HTTP packet from the second node indicating available space in the receive buffer of the second node;

15 determining from the information indicating available space in the receive buffer included in the received HTTP packet that there is space available to receive the one or more messaging system messages on the second node;

generating a second one or more HTTP packets, wherein the second one or more HTTP packets include the one or more messaging system messages; and

20 transmitting the second one or more HTTP packets to the second node via the HTTP tunnel connection.

40. The method as recited in claim 38, wherein the first node is a client in the messaging system, wherein the HTTP tunnel connection passes through a Web server, 25 and wherein, in said transmitting the acknowledgement HTTP packet to the first node, the method further comprises:

transmitting the acknowledgement HTTP packet to the Web server;

storing the acknowledgement HTTP packet in an HTTP packet buffer on the Web server;

the client sending an HTTP request packet to the Web server; and

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the Web server transmitting the acknowledgement HTTP packet stored in the HTTP packet buffer to the client via the HTTP tunnel connection in response to the HTTP request packet.

10 41. The method as recited in claim 38, wherein the first node is a broker in the messaging system, wherein the HTTP tunnel connection passes through a Web server, and wherein, in said transmitting the acknowledgement HTTP packet to the first node, the method further comprises:

15 transmitting the acknowledgement HTTP packet to the Web server; and

the Web server forwarding the acknowledgement HTTP packet to the first node via a Transmission Control Protocol (TCP) connection portion of the HTTP tunnel connection.

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42. The method as recited in claim 31, wherein the first node is a server in the messaging system, and wherein the second node is a client in the messaging system.

25 43. The method as recited in claim 31, wherein the second node is a client in the messaging system, wherein the HTTP tunnel connection passes through a Web server, and wherein, in said transmitting the one or more HTTP packets to the second node via the HTTP tunnel connection, the method further comprises:

transmitting the one or more HTTP packets to the Web server;

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storing the one or more HTTP packets in an HTTP packet buffer on the Web server;

the client sending one or more HTTP request packets to the Web server; and

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the Web server transmitting the one or more HTTP packets stored in the HTTP packet buffer to the client via the HTTP tunnel connection in response to the one or more HTTP request packets.

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44. A method comprising:

establishing a transport protocol tunnel connection from a first node in a messaging system to a second node in the messaging system;

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generating a sequence of messaging system messages on the first node;

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generating a plurality of transport protocol packets on the first node, wherein each of the transport protocol packets includes at least a part of one of the sequence of messaging system messages, and wherein each of the transport protocol packets includes sequence information for the particular messaging system message;

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transmitting the plurality of transport protocol packets to the second node in the messaging system via the transport protocol tunnel connection;

receiving the plurality of transport protocol packets on the second node; and

processing the sequence of messaging system messages on the second node, wherein said processing uses the sequence information for the plurality of messaging system messages in the plurality of transport protocol packets.

5 45. The method as recited in claim 44, wherein the transport protocol tunnel connection is established through the Internet, and wherein the transport protocol tunnel connection passes through at least one firewall.

10 46. The method as recited in claim 44, wherein the first node is a client in the messaging system, wherein the second node is a broker in the messaging system.

15 47. The method as recited in claim 44, wherein the second node is a broker in the messaging system, wherein the transport protocol tunnel connection passes through a Web server, and wherein said transmitting the plurality of transport protocol packets to the second node in the messaging system via the transport protocol tunnel connection comprises:

transmitting the plurality of transport protocol packets from the first node to the Web server; and

20 the Web server forwarding the plurality of transport protocol packets to the broker;

25 wherein the transport protocol tunnel connection passes through at least one firewall between the proxy server and the Web server.

48. The method as recited in claim 44, wherein the first node is a broker in the messaging system, wherein the second node is a client in the messaging system.

49. The method as recited in claim 44, wherein the second node is a client in the messaging system, wherein the transport protocol tunnel connection passes through a Web server, and wherein, in said transmitting the plurality of transport protocol packets to the second node in the messaging system via the transport protocol tunnel connection 5 comprises:

transmitting the plurality of transport protocol packets to the Web server;
10 storing the plurality of transport protocol packets in a transport protocol packet buffer on the Web server;

the client sending one or more transport protocol request packets to the Web server; and
15 the Web server transmitting the plurality of transport protocol packets stored in the transport protocol packet buffer to the client via the transport protocol tunnel connection in response to the one or more transport protocol request packets.

20 50. The method as recited in claim 44, further comprising:

storing the sequence of messaging system messages from the received transport protocol packets in a receive buffer on the second node;
25 the second node generating an acknowledgement transport protocol packet for each of the received transport protocol packets to indicate successful receipt of the transport protocol packets including the sequence of messaging system messages; and

transmitting the acknowledgement transport protocol packets to the first node via
the transport protocol tunnel connection;

5 wherein each of the acknowledgement transport protocol packets includes
information indicating available space in the receive buffer, wherein the
information indicating available space in the receive buffer is configured
for use in flow control of messaging system messages transmitted from the
first node to the second node.

10 51. The method as recited in claim 44, wherein the transport protocol is Hypertext
Transport Protocol (HTTP).

15 52. A method comprising:

establishing a transport protocol tunnel connection from a first node in a
messaging system to a second node in the messaging system;

20 the first node receiving a first transport protocol packet from the second node
indicating available space in a receive buffer of the second node;

generating one or more messaging system messages on the first node;

25 storing the one or more messaging system messages in a transmit buffer on the
first node;

30 determining from the information indicating available space in the receive buffer
included in the received acknowledgement HTTP packet that there is not
space available to receive the one or more messaging system messages on
the second node;

the first node receiving a second transport protocol packet from the second node
indicating available space in the receive buffer of the second node;

5 determining from the information indicating available space in the receive buffer
 included in the received second transport protocol packet that there is
 space available to receive the one or more messaging system messages on
 the second node;

10 generating one or more transport protocol packets, wherein the second one or
 more transport protocol packets include the generated one or more
 messaging system messages; and

15 transmitting the one or more transport protocol packets to the second node via the
 transport protocol tunnel connection.

53. The method as recited in claim 52, wherein the transport protocol tunnel
connection is established through the Internet, and wherein the transport protocol tunnel
connection passes through at least one firewall.

20 54. The method as recited in claim 52, wherein the first node is a client in the
messaging system, wherein the second node is a broker in the messaging system.

25 55. The method as recited in claim 52, wherein the first node is a broker in the
messaging system, wherein the second node is a client in the messaging system.

56. The method as recited in claim 52, further comprising:

receiving the one or more transport protocol packets on the second node;

5 storing the one or more messaging system messages from the received one or
more transport protocol packets in the receive buffer on the second node;

10 the second node generating one or more acknowledgement transport protocol
packets to indicate successful receipt of the one or more transport protocol
packets including the one or more of messaging system messages; and

15 transmitting the one or more acknowledgement transport protocol packets to the
first node via the transport protocol tunnel connection;

15 wherein each of the acknowledgement transport protocol packets includes
information indicating available space in the receive buffer.

57. The method as recited in claim 52, wherein the one or more transport protocol
packets include messaging system message sequence information configured for use in
20 processing two or more messaging system messages in sequence.

58. The method as recited in claim 52, wherein the transport protocol is Hypertext
Transport Protocol (HTTP).

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59. A messaging system comprising:

 a first node comprising a first memory;

30 a second node comprising a second memory;

wherein the first memory comprises first program instructions executable within the first node to:

5 establish a transport protocol tunnel connection from the first node to the second node through a network;

generate a messaging system message;

10 generate one or more transport protocol packets, wherein the one or more transport protocol packets each includes at least a part of the messaging system message; and

15 transmit the one or more transport protocol packets to the second node via the transport protocol tunnel connection;

20 wherein the transport protocol tunnel connection provides full-duplex transmission of messaging system messages between the first node and the second node, and wherein the transport protocol tunnel connection further provides delivery of the messaging system messages in the sequence in which the messaging system messages are generated.

60. The messaging system as recited in claim 59, wherein the first node further comprises a transmit buffer, wherein the first program instructions are further executable within the first node to store the messaging system message in the transmit buffer on the first node after said generating the messaging system message.

61. The messaging system as recited in claim 59, wherein the transport protocol tunnel connection passes through a proxy server, and wherein, in said transmitting the one or more transport protocol packets to the second node via the transport protocol tunnel

connection, the first program instructions are further executable within the first node to transmit the one or more transport protocol packets from the first node to the proxy server, wherein the proxy server is configured to transmit the one or more transport protocol packets to the second node.

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62. The messaging system as recited in claim 59, wherein the transport protocol tunnel connection passes through at least one firewall.

10 63. The messaging system as recited in claim 59, wherein the transport protocol tunnel connection is established through the Internet.

64. The messaging system as recited in claim 59, wherein the first node is a client in the messaging system, and wherein the second node is a broker in the messaging system.

15 65. The messaging system as recited in claim 59, wherein the messaging system further comprises:

a third node comprising a third memory;

20 wherein the transport protocol tunnel connection passes through the third node, and wherein, in said transmitting the one or more transport protocol packets to the second node, the first program instructions are further executable within the first node to:

25 transmit the one or more transport protocol packets to the third node;

wherein the third memory comprises third program instructions executable within the third node to:

30 receive the one or more transport protocol packets from the first node; and

forward the one or more received transport protocol packets to the second node.

5 66. The messaging system as recited in claim 65, wherein the one or more transport protocol packets are forwarded from the third node to the second node via a Transmission Control Protocol (TCP) connection portion of the transport protocol tunnel connection between the third node and the second node.

10 67. The messaging system as recited in claim 66, wherein the transport protocol tunnel connection passes through at least one firewall between the first node and the third node.

15 68. The messaging system as recited in claim 59, wherein the one or more transport protocol packets include messaging system message sequence information configured for use in processing two or more messaging system messages in sequence.

69. The messaging system as recited in claim 59, wherein the second memory comprises second program instructions executable within the second node to:

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receive the transmitted one or more transport protocol packets;

25 generate an acknowledgement transport protocol packet to indicate successful receipt of the one or more transport protocol packets including the messaging system message; and

transmit the acknowledgement transport protocol packet to the first node via the transport protocol tunnel connection.

70. The messaging system as recited in claim 69, wherein the second node further comprises a receive buffer, wherein the second program instructions are further executable within the second node to:

5 store the messaging system message from the received one or more transport protocol packets in the receive buffer of the second node;

wherein the acknowledgement transport protocol packet includes information indicating available space in the receive buffer of the second node.

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71. The messaging system as recited in claim 70, wherein the first node further comprises a transmit buffer, wherein the first program instructions are further executable within the first node to:

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receive the transmitted acknowledgement transport protocol packet;

generate one or more messaging system messages;

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store the one or more messaging system messages in the transmit buffer on the first node;

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from the information indicating available space in the receive buffer included in the received acknowledgement transport protocol packet, determine if there is space available to receive the one or more messaging system messages on the second node;

if said determining indicates there is space available to store the one or more messaging system messages in the receive buffer of the second node:

generate a second one or more transport protocol packets, wherein the second one or more transport protocol packets include the one or more messaging system messages; and

5 transmit the second one or more transport protocol packets to the second node via the transport protocol tunnel connection; and

10 if said determining indicates there is not space available to store the second messaging system message in the receive buffer of the second node, inhibit generating the second one or more transport protocol packets including the one or more messaging system messages.

15 72. The messaging system as recited in claim 71, wherein the first program instructions are further executable within the first node to:

receive a transport protocol packet indicating available space in the receive buffer of the second node;

20 from the information indicating available space in the receive buffer included in the received transport protocol packet, determine that there is space available to receive the one or more messaging system messages on the second node;

25 generate the second one or more transport protocol packets, wherein the second one or more transport protocol packets include the one or more messaging system messages; and

transmit the second one or more transport protocol packets to the second node via the transport protocol tunnel connection.

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73. The messaging system as recited in claim 69, further comprising:

a third node comprising:

5 a third memory; and

a transport protocol packet buffer;

wherein the transport protocol tunnel connection passes through the third node,

10 wherein the third memory comprises third program instructions executable
within the third node to:

15 receive the acknowledgement transport protocol packet transmitted to the
first node via the transport protocol tunnel connection from the
second node; and

store the received acknowledgement transport protocol packet in the
transport protocol packet buffer.

20 74. The messaging system as recited in claim 73, wherein the first program
instructions are further executable within the first node to:

transmit a transport protocol request packet to the third node; and

25 wherein the third program instructions are further executable within the third node
to:

receive the transport protocol request packet from the first node; and

transmit the acknowledgement transport protocol packet stored in the transport protocol packet buffer to the first node via the transport protocol tunnel connection in response to the received transport protocol request packet.

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75. The messaging system as recited in claim 69, further comprising:

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a third node comprising a third memory, wherein the transport protocol tunnel connection passes through the third node, wherein the third memory comprises third program instructions executable within the third node to:

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receive the acknowledgement transport protocol packet transmitted to the first node via the transport protocol tunnel connection from the second node; and

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forward the acknowledgement transport protocol packet to the first node.

76. The messaging system as recited in claim 59, wherein the first node is a server in the messaging system, and wherein the second node is a client in the messaging system.

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77. The messaging system as recited in claim 59, further comprising:

a third node comprising:

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a third memory; and

a transport protocol packet buffer;

wherein the transport protocol tunnel connection passes through the third node,
wherein the third memory comprises third program instructions executable
within the third node to:

5 receive the one or more transport protocol packets transmitted to the
second node via the transport protocol tunnel connection from the
first node; and

10 store the one or more transport protocol packets in the transport protocol
packet buffer on the third node.

wherein the second program instructions are further executable within the second
node to transmit one or more transport protocol request packets to the third
node; and

15 wherein the third program instructions are further executable within the third node
to:

20 receive the one or more transmitted transport protocol request packets; and
transmit the one or more transport protocol packets stored in the transport
protocol packet buffer to the second node via the transport protocol
tunnel connection in response to the received one or more transport
protocol request packets.

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78. The messaging system as recited in claim 59, wherein the transport protocol is
Hypertext Transport Protocol (HTTP).

79. The messaging system as recited in claim 59, wherein the transport protocol is one of UDP (User Datagram Protocol), IrDA (Infrared Data Association), SNA (Systems Network Architecture), IPX (Internetwork Packet eXchange), and Bluetooth.

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80. A carrier medium comprising program instructions, wherein the program instructions are computer-executable to implement:

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establishing a transport protocol tunnel connection from a first node in a messaging system to a second node in the messaging system;

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generating a messaging system message on the first node;

generating one or more transport protocol packets, wherein the one or more transport protocol packets each includes at least a part of the messaging system message; and

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transmitting the one or more transport protocol packets to the second node via the transport protocol tunnel connection;

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wherein the transport protocol tunnel connection provides full-duplex transmission of messaging system messages between the first node and the second node, and wherein the transport protocol tunnel connection further provides delivery of the messaging system messages in the sequence in which the messaging system messages are generated.

81. The carrier medium as recited in claim 80, wherein the transport protocol tunnel connection passes through a Web server, wherein the second node is a broker in the messaging system, and wherein, in said transmitting the one or more transport protocol

packets to the second node, the program instructions are further computer-executable to implement:

transmitting the one or more transport protocol packets to the Web server; and

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the Web server forwarding the one or more transport protocol packets to the broker via a Transmission Control Protocol (TCP) connection portion of the transport protocol tunnel connection between the Web server and the broker.

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82. The carrier medium as recited in claim 80, wherein the first node is a client in the messaging system, wherein the second node is a broker in the messaging system, wherein the transport protocol tunnel connection passes through a proxy server and a Web server, and wherein, in said transmitting the one or more transport protocol packets to the broker via the transport protocol tunnel connection, the program instructions are further computer-executable to implement:

transmitting the one or more transport protocol packets from the client to the proxy server;

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transmitting the one or more transport protocol packets from the proxy server to the Web server; and

the Web server forwarding the one or more transport protocol packets to the broker;

wherein the transport protocol tunnel connection passes through at least one firewall between the proxy server and the Web server.

83. The carrier medium as recited in claim 80, wherein the acknowledgement transport protocol packet includes information indicating available space in the receive buffer, and wherein the program instructions are further computer-executable to implement:

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receiving the transmitted one or more transport protocol packets on the second node;

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storing the messaging system message from the one or more transport protocol packets in a receive buffer on the second node;

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generating on the second node an acknowledgement transport protocol packet to indicate successful receipt of the one or more transport protocol packets including the messaging system message;

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transmitting the acknowledgement transport protocol packet to the first node via the transport protocol tunnel connection;

receiving the transmitted acknowledgement transport protocol packet on the first node;

generating one or more messaging system messages on the first node;

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storing the one or more messaging system messages in a transmit buffer on the first node;

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determining from the information indicating available space in the receive buffer included in the received acknowledgement transport protocol packet that there is space available to receive the one or more messaging system messages on the second node;

generating a second one or more transport protocol packets, wherein the second one or more transport protocol packets include the one or more messaging system messages; and

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transmitting the second one or more transport protocol packets to the second node via the transport protocol tunnel connection.

84. The carrier medium as recited in claim 80, wherein the first node is a client in the 10 messaging system, wherein the transport protocol tunnel connection passes through a Web server, and wherein the program instructions are further computer-executable to implement:

15 receiving the transmitted one or more transport protocol packets on the second node;

storing the messaging system message from the one or more transport protocol packets in a receive buffer on the second node;

20 the second node generating an acknowledgement transport protocol packet to indicate successful receipt of the one or more transport protocol packets including the messaging system message;

transmitting the acknowledgement transport protocol packet to the Web server;

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storing the acknowledgement transport protocol packet in a transport protocol packet buffer on the Web server;

the client sending a transport protocol request packet to the Web server; and

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the Web server transmitting the acknowledgement transport protocol packet stored in the transport protocol packet buffer to the client via the transport protocol tunnel connection in response to the transport protocol request packet.

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85. The carrier medium as recited in claim 80, wherein the first node is a broker in the messaging system, wherein the transport protocol tunnel connection passes through a Web server, and wherein the program instructions are further computer-executable to implement:

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receiving the transmitted one or more transport protocol packets on the second node;

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storing the messaging system message from the one or more transport protocol packets in a receive buffer on the second node;

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the second node generating an acknowledgement transport protocol packet to indicate successful receipt of the one or more transport protocol packets including the messaging system message;

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transmitting the acknowledgement transport protocol packet to the Web server; and

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the Web server forwarding the acknowledgement transport protocol packet to the first node via a Transmission Control Protocol (TCP) connection portion of the transport protocol tunnel connection.

86. The carrier medium as recited in claim 80, wherein the second node is a client in the messaging system, wherein the transport protocol tunnel connection passes through a Web server, and wherein, in said transmitting the one or more transport protocol packets

to the second node via the transport protocol tunnel connection, the program instructions are further computer-executable to implement:

transmitting the one or more transport protocol packets to the Web server;

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storing the one or more transport protocol packets in a transport protocol packet buffer on the Web server;

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the client sending one or more transport protocol request packets to the Web server; and

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the Web server transmitting the one or more transport protocol packets stored in the transport protocol packet buffer to the client via the transport protocol tunnel connection in response to the one or more transport protocol request packets.

87. The carrier medium as recited in claim 80, wherein the transport protocol is Hypertext Transport Protocol (HTTP).

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